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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,623	12/22/2000	Richard A. Keeney	EFIM1174	4584

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EXAMINER

SHAPIRO, LEONID

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/748,623	Applicant(s) KEENEY ET AL.	
	Examiner Leonid Shapiro	Art Unit 2677	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-6,11-13,15,18-20,25-27 and 29-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,11-13,15,18-20,25-27, 29-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 1, 4-6, 11-13, 15, 18-20, 25-27, 29-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Newly introduced limitation independent claim 1: "**fully manufacturing** the control chip" and claim 15: "**fully-manufactured** complimentary metal-oxide semiconductor (CMOS) control chip" contains subject matter which was not described in the specification or shown in the drawings. Specification described the invention being implemented **during** manufacturing process, but not **after** manufacturing process (See page 13, Lines 27-30).

Notice, that for one skilled in the art will be difficult to understand who and how will mitigate defects caused by inoperative pixels in a liquid crystal micro-display apparatus after manufacturing process by the user during the usage of a liquid crystal micro-display apparatus.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 11-13, 15, 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurogane (US Patent No. 6,259,424 B1) in view of Krusius et al. (US Patent No. 6,005,649) and Lambert (US Patent No. 6,816,143 B1) and Yamazaki et al. (US Patent No. 6,147,667).

As to claim 1, Kurogane teaches a method for mitigating defects caused by inoperative pixels in liquid crystal display built on a silicon integrated circuit substrate (See Col. 5, Lines 3-34), substrate having an integral metal-oxide semiconductor (MOS) control chip (See Col. 8, Lines 11-15) containing MOS drive circuitry (See Fig. 1, items 1A, 1B, 10, Col. 6, Lines 41-45, from Col. 1, Line 65 to Col. 7, Line 2), comprising: identifying defective MOS drive circuitry for the inoperative pixel (See Fig. 4, items 21A, 22, Col. 8, Lines 16-38) after fabrication of MOS control chip (See Col. 8, Lines 11-15); disconnecting the defective drive circuitry from inoperative pixel (See Fig. 7, items 1A, 33, Col. 9, Lines 51-57).

Kurogane does not show connecting the inoperative pixel to a working drive circuit of nearby pixel, the defective drive circuitry is bypassed and inoperative pixel is

Art Unit: 2629

driven from working drive circuit of a nearby circuit, nearby pixel comprising one of adjacent or a non-adjacent pixel.

Lambert teaches connecting the inoperative column of pixels to a working drive circuit of nearby column of pixels, the defective drive circuitry is bypassed and inoperative pixel column is driven from working drive circuit of a nearby circuit nearby pixel column comprising one of adjacent or a non-adjacent pixel column (See Fig. 3, items 43, 45, Col. 96, Lines 3-7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Lambert into the Kurogane system in order to be capable of self-diagnostic and repair (See Col. 1, Lines 6-10).

Kurogane and Lambert do not show micro-display and CMOS control chip and CMOS drive circuitry.

Krusius et al. teaches the back plane of a typical micro-display is formed from a crystalline silicon chip includes CMOS integrated circuits (See Col. 2, Lines 1-4) and CMOS driver circuit (See Col. 2, Lines 27-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use micro-display and CMOS integrated circuits using typical SRAM process as shown by Krusius et al. in the Kurogane and Lambert system for repairing MOS panels in order to reduce size of display to 10X7 mm (See Col. 1, Lines 31-35).

Krusius et al., Kurogane and Lambert do not show using a bypass bit latch, such that when a bypass bit is set, the defective drive circuitry is bypassed.

Yamazaki et al. teaches the latch circuit controlled the bit signals (See Fig. 12B and 12C, items 63-71, in description See Col. 24, Lines 1-7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use bit latch as bypass latch as shown by Yamazaki et al. in the Krusius et al., Kurogane and Lambert apparatus and method in order to repair panels having sufficiently few defects.

As to claim 15, Kurogane teaches mitigating defects caused by inoperative pixels in liquid crystal display, comprising:

a plurality of pixels (See Fig. 17, item 2, Col. 2, Lines 1-13);

an integral metal-oxide semiconductor (MOS) control chip (See Col. 8, Lines 11-15) containing MOS drive circuitry (See Fig. 1, items 1A, 1B, 10, Col. 6, Lines 41-45, from Col. 1, Line 65 to Col. 7, Line 2), comprising: identifying defective MOS drive circuitry for the inoperative pixel (See Fig. 4, items 21A, 22, Col. 8, Lines 16-38) after fabrication of MOS control chip (See Col. 8, Lines 11-15);

means for disconnecting the defective drive circuitry from inoperative pixel (See Fig.7, items 1A, 33, Col. 9, Lines 51-57).

Kurogane does not show connecting the inoperative pixel to a working drive circuit of nearby pixel, the detective drive circuitry is by passed and inoperative pixel is driven from working drive circuit of a nearby circuit, nearby pixel comprising one of adjacent or a non-adjacent pixel.

Lambert teaches connecting the inoperative column of pixels to a working drive circuit of nearby column of pixels, the detective drive circuitry is by passed and

inoperative pixel column is driven from working drive circuit of a nearby circuit nearby pixel column comprising one of adjacent or a non-adjacent pixel column (See Fig. 3, items 43, 45, Col. 96, Lines 3-7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate teaching of Lambert into the Kurogane system in order to be capable of self-diagnostic and repair (See Col. 1, Lines 6-10).

Kurogane and Lambert do not show micro-display and CMOS control chip and CMOS drive circuitry.

Krusius et al. teaches the back plane of a typical micro-display is formed from a crystalline silicon chip includes CMOS integrated circuits (See Col. 2, Lines 1-4) and CMOS driver circuit (See Col. 2, Lines 27-30).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use micro-display and CMOS integrated circuits using typical SRAM process as shown by Krusius et al. in the Kurogane and Lambert system for repairing MOS panels in order to reduce size of display to 10X7 mm (See Col. 1, Lines 31-35).

Krusius et al., Kurogane and Lambert do not show using a bypass bit latch, such that when a bypass bit is set, the defective drive circuitry is bypassed.

Yamazaki et al. teaches the latch circuit controlled the bit signals (See Fig. 12B and 12C, items 63-71, in description See Col. 24, Lines 1-7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use bit latch as bypass latch as shown by Yamazaki et al. in the Krusius et

al., Kurogane and Lambert apparatus and method in order to repair panels having sufficiently few defects.

As to claims 11, 25, Kurogane teaches pixels repaired in groups (See Fig. 10A, 10B, items y_i and y_{i+1} , in description See Col. 10, Lines 52-58).

As to claims 12, 26, Kurogane teaches identifying defective drive circuitry comprises the further step of providing test circuitry associated with the display (See Fig. 4, items 21A, 22, Col. 8, Lines 16-38).

As to claims 13, 27, Kurogane teaches pixel drive circuitry associated with each pixel is located separately from each pixel (See Fig. 4, items 1A, 3A, 1B, 3B, in description See Col. 7, Lines 1-33).

3. Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., the Krusius et al., Kurogane and Lambert as applied to claim 1 above, and further in view of Hiroki (US Patent No. 6, 618, 115 B1).

Yamazaki et al., the Krusius et al., Kurogane and Lambert do not show defective CMOS drive circuitry is identified after the CMOS control chip and the liquid crystal material assembled together via optical inspection of the display after assembly of display.

Hiroki teaches defective CMOS drive circuitry is identified after the CMOS control chip and the liquid crystal material assembled together via optical inspection of the display after assembly of display (See Figs 5-6, items 301-307, in description See Col. 6, Lines 16-28 and 51-67, Col. 10, Lines 4-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to identify defective CMOS drive circuitry after the CMOS control chip and the liquid crystal material assembled together via optical inspection of the display after assembly of display as shown by Hiroki in Yamazaki et al., the Krusius et al., Kurogane and Lambert apparatus and method in order to repair panels having sufficiently few defects.

4. Claims 4, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., the Krusius et al., Kurogane and Lambert as aforementioned in claims 1 and 15 in view of Yamazaki et al. (US Patent No. 6, 147, 667).

Yamazaki et al., the Krusius et al., Kurogane and Lambert do not show additional circuitry with a bypass bit latch, such when bypass bit latch is set from an external memory, the defective drive circuitry is bypassed and the inoperative pixel is driven from the working drive circuit of the nearby pixel.

Yamazaki et al. teaches the latch circuit controlled the bit signals (See Fig. 12B and 12C, items 63-71, in description See Col. 24, Lines 1-7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use bit latch as shown by Yamazaki et al. in the Yamazaki et al., the Krusius et al., Kurogane and Lambert apparatus and method in order to repair panels having sufficiently few defects.

5. Claims 5, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., the Krusius et al., Kurogane and Lambert as aforementioned in claims 1 and 15 in view of Yang (US Patent No. 6,392,427 B1).

Yamazaki et al., the Krusius et al., Kurogane and Lambert do not show multiplexing the drive circuits of each pixel with the drive circuit of a nearby pixel.

Yang teaches multiplexer and drive array to route test patterns (See Fig 4, items 400, 406, 408, in description see Col. 4, lines 55-59).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use multiplexer as shown by Yang in the Yamazaki et al., the Krusius et al., Kurogane and Lambert apparatus and method in order to repair panels having sufficiently few defects.

6. Claims 6, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., the Krusius et al., Kurogane and Lambert as aforementioned in claims 1 and 15 in view of Anholm et al. (US Patent No. 5,043,655).

Yamazaki et al., the Krusius et al., Kurogane and Lambert do not show tri-state transistor associated with each pixel connected to the bypass latch and resistor coupling neighboring pixels, such that when the bypass bit is set, the transistor is switched to bypass the defective drive circuitry so that the inoperative pixel is driven from the working drive circuit of a nearby pixel through resistor.

Kurogane teaches to connect nearby pixel (See Fig. 7, items 2A,2B,33).

Anholm et al. teaches tri-state control (See Fig. 4, items 50-56, in description see Col. 7, Lines 29-45).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use a tri-state transistor with bypass latch and resistor as shown by Anholm et al. in the Yamazaki et al., the Krusius et al., Kurogane and Lambert. apparatus and method in order to repair panels having sufficiently few defects.

Response to Arguments

7. Applicant's arguments filed 02/23/06 have been fully considered but they are not persuasive:

On page 3, 2nd paragraph of Remarks, Applicant's stated that "that testing and repair can be accomplished at any time in the manufacturing process, even after assembly of the LCD", as set forth on page 13, lines 9-12 and 27-30 in Specification. However, at first Specification stated that that testing and repair can be accomplished at any time in the **manufacturing** process and secondly after assembly of the LCD. But manufacturing process is not completed until final configuration of is done and micro-display ship to the user.

On page 3, last paragraph of Remarks, Applicant's stated that examples clearly describe how defective drive circuitry may be disconnected from an inoperative pixel, and how the inoperative pixel may be connected to a working drive of nearby pixel. However, even after assembling of LCD, manufacturing process is not completed until all defects will be mitigated. User will not be able to implement repairs because he has

no knowledge or the tools enabling the process of repair. Therefore, control chip is not fully manufactured until mitigation of defects done and the product send to the user.

On page 4, 2nd paragraph of Remarks, Applicant's stated that difference between the prior art of the record and proposed invention is only the newly introduced limitation related to the fully manufactured control chip, which was rejected in this and previous office action under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


Telephone inquire

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 571-272-7683. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe can be reached on 571-272-7691. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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